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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,176

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EXAMINER

BISHOP, ERIN D

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,176	Applicant(s) AKIYAMA ET AL.	
	Examiner ERIN D. BISHOP	Art Unit 3655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/21/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed 08/21/2006 has been considered and placed of record in the file.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

in Fig. 6, reference signs 24c2, 26c, 30d, and 29e.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be

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notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

on pg. 1, paragraph 3, line 7, element "prove" should be corrected to --probe--;

on pg. 5, paragraph 5, lines 1-3, the phrase "FIG. 3 is a side view...taken from arrow E...shown in FIG. 2" is unclear since it appears that Fig. 3 is not taken along arrow E in Fig. 2;

on pg. 5, paragraph 7, lines 1-3, the phrase "FIG. 5 is a side view...taken from arrow G...shown in FIG. 3" is unclear since it appears that Fig. 5 is not taken along arrow G in Fig. 3;

on pg. 9, paragraph 1, line 5, element "inner teeth gear body 21" should be corrected to --inner teeth gear body 28--;

on pg. 9, paragraph 1, line 7, element "planetary gear type speed reducers 31" should be corrected to -- planetary gear type speed reducer 31--;

on pg. 10, paragraph 1, line 1, the phrase "The center position C in the direction of the axial line A" is unclear since Figs. 2 and 6 show center position C perpendicular to axial line A, not in the direction of axial line A.

Appropriate correction is required.

Claim Objections

5. Claims 1 and 5 are objected to because of the following informalities:

in claim 1, line 3, element “turning around a turning pivot on the axial line and a drive device” should be corrected to --turning around a turning pivot on the axial line, and a drive device--;

in claim 1, line 4, element “wherein: the drive device is composed of:” should be corrected to --wherein the drive device is composed of:--;

in claim 1, lines 7-8, element “disposed between the fixing section and the rotation output section and a motor” should be corrected to --disposed between the fixing section and the rotation output section, and a motor--;

in claim 1, line 10, element “and that the turning arm has a first plane” should be corrected to --and wherein the turning arm has a first plane--;

in claim 3, line 6, element “previous-stage reducer” should be corrected to --previous-stage speed reducer--;

in claim 5, line 2, element “turning around a turning pivot on the axial line and a drive device” should be corrected to --turning around a turning pivot on the axial line, and a drive device--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, line 3, the phrase “the axial line” renders the claim indefinite because it lacks antecedent basis.

Regarding claim 1, line 4, the phrase “turning operation of the turning arm” renders the claim indefinite because it lacks antecedent basis.

Regarding claim 1, lines 6 and 12-13, the phrase “the axial line of the turning pivot” renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the same axial line previously claimed (line 3).

Regarding claim 1, lines 4-7, the phrase “the drive device is composed of: a fixing section, a rotation input section, a rotation output section..., a planetary gear type speed reducer” renders the claim indefinite because the planetary gear type speed reducer appears to be a double inclusion of the fixing section, rotation input section, and rotation output section, which appear to be parts of the planetary gear type speed reducer.

Regarding claim 1, lines 9-10, the phrase “the rotation input section of the planetary gear type speed reducer” renders the claim indefinite because it lacks

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antecedent basis, and it is unclear if it is the same rotation input section of the drive device previously claimed (line 5).

Regarding claim 1, line 11, the phrase “the plane of the rotation output section” renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the orthogonal plane previously claimed (line 6).

Regarding claim 1, lines 11-12, the phrase “a second plane...positioned nearer to the heavy object” renders the claim indefinite because the term “nearer” is a relative term, and it is unclear what reference is farther from the heavy object than the second plane.

Regarding claim 1, lines 13-14, the phrase “the turning arm and the drive device are disposed *within a width* of the turning pivot” renders the claim indefinite because “a width” is a relative term.

Regarding claim 1, lines 14-15, the phrase “the turning pivot of the heavy object” renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the turning pivot previously claimed (line 3).

Regarding claim 2, the language renders the claim indefinite because it is unclear as to what the applicant is claiming.

Regarding claim 2, line 2, the phrase “the axial center of the turning pivot of the heavy object” renders the claim indefinite because it lacks antecedent basis, and it is unclear if “the turning pivot of the heavy object” is the turning pivot previously recited in claim 1 (line 3).

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Regarding claim 2, line 5, the phrase "the axial line of the turning pivot" renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the same axial line previously recited in claim 1 (line 3).

Regarding claim 2, line 6, the phrase "the perpendicular line of the one ball bearing" renders the claim indefinite because it lacks antecedent basis.

Regarding claim 3, lines 5-6, the phrase "the output rotation section of the previous-stage reducer" renders the claim indefinite because it lacks antecedent basis.

Regarding claim 4, lines 3-4 and 7, the phrase "the fixing section of the planetary gear type speed reducer" renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the same fixing section of the drive device previously recited in claim 1 (line 5).

Regarding claim 4, line 5, the phrase "the plane of the rotation output section" renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the orthogonal plane previously recited in claim 1 (line 6).

Regarding claim 4, lines 9-10, the phrase "outer both ends of the first mounting surface" renders the claim indefinite because it is unclear as to what applicant is claiming.

Regarding claim 4, line 10, the phrase "outer both ends of the second mounting surface" renders the claim indefinite because it is unclear as to what applicant is claiming.

Regarding claim 4, lines 11-12, the phrase "the outside-diameter section of *the mounting flat surface* of the fixing section of the planetary gear type speed reducer"

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renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the outside-diameter section of the fixing section of the planetary gear type speed reducer previously claimed (lines 3-4).

Regarding claim 4, lines 11-13, the phrase “the outside-diameter section...is cut so that its side of the pair of ribs may be shorter than the circular outside diameter” renders the claim indefinite because it is unclear as to what applicant is claiming.

Regarding claim 5, line 2, the phrase “a heavy object” renders the claim indefinite because it appears to be a double inclusion of the heavy object previously claimed (line 1).

Regarding claim 5, line 2, the phrase “the axial line” renders the claim indefinite because it lacks antecedent basis.

Regarding claim 5, line 3, the phrase “turning operation of the turning arm” renders the claim indefinite because it lacks antecedent basis.

Regarding claim 5, lines 3-6, the phrase “the drive device includes a fixing section, a rotation input section, a rotation output section..., a planetary gear type speed reducer” renders the claim indefinite because the planetary gear type speed reducer appears to be a double inclusion of the fixing section, rotation input section, and rotation output section, which appear to be parts of the planetary gear type speed reducer.

Regarding claim 5, line 5, the phrase “the axial line of the turning pivot” renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the same axial line previously claimed (line 2).

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Regarding claim 5, lines 7-8, the phrase “the rotation input section of the planetary gear type speed reducer” renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the same rotation input section of the drive device previously claimed (line 4).

Regarding claim 5, line 9, the phrase “the plane of the rotation output section” renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the orthogonal plane previously claimed (line 5).

Regarding claim 5, line 11, the phrase “the turning pivot of the heavy object” renders the claim indefinite because it lacks antecedent basis, and it is unclear if it is the same turning pivot previously claimed (line 2).

Claims 2-4 are also rejected as being dependent from a rejected base claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Dalakian, U.S. Patent 5,222,409.

Regarding claim 1, as best understood, Dalakian teaches the claimed turning device (shoulder of robot arm, col. 3, lines 39-41, and fig. 8) for a heavy object (lower arm 26, fig. 2) comprising:

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a turning arm joined to the heavy object (upper arm 24, figs. 2 and 8) and turning around a turning pivot on the axial line (shoulder pivot 32, fig. 8) and

a drive device for driving turning operation of the turning arm (see fig. 8) wherein: the drive device is composed of:

- a fixing section (rigid annulus 112, col. 6, lines 18-19, and fig. 8),

- a rotation input section (wave generator 108, col. 6, line 16, and fig. 8),

- a rotation output section (crank 46, col. 6, line 40, and fig. 8) having an orthogonal plane orthogonal to the axial line of the turning pivot (orthogonal plane of crank 46, see fig. A below),

- a planetary gear type speed reducer (wave gear set, col. 6, line 17, and fig. 8) with a pair of ball bearings (bearings 144, fig. 8) disposed between the fixing section and the rotation output section (bearings 144 are disposed axially between rigid annulus 112 and crank 46, fig. 8) and

- a motor (motor 70, col. 5, line 47, and fig. 8) including a rotor shaft (rotor 78, col. 5, line 54, and fig. 8) coaxially connected to a stator having a coil (stator, col. 5, line 48) and the rotation input section of the planetary gear type speed reducer (rotor 78 is coaxially connected to wave generator 108 via sun gear 82 of a planetary gear train, col. 5, lines 54-56, and fig. 8); and that

the turning arm has a first plane connected to the plane of the rotation output section (first plane of upper arm 24, see fig. A below) and a second plane connected to the heavy object, positioned nearer to the heavy object from the axial line of the turning

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pivot and orthogonal to the first plane (second plane of upper arm 24, see fig. B below), and

the turning arm and the drive device are disposed within a width of the turning pivot of the heavy object in the axial direction (upper arm 24 and the shoulder joint drive device are within the axial width of shoulder pivot 32, fig. 8).

Regarding claim 2, as best understood, Dalakian teaches:

the axial center of the turning pivot of the heavy object (axial center of shoulder pivot 32, see fig. A below) is positioned within a distance between one of the pair of ball bearings, which is positioned on the orthogonal plane side of the rotation output section, and an intersection obtained by crossing the axial line of the turning pivot with a line at a bearing contact angle to the perpendicular line of the one ball bearing (line at a bearing contact angle, see fig. A below).

Regarding claim 3, as best understood, Dalakian teaches:

a previous-stage speed reducer (planetary gear train, col. 5, line 56, and fig. 8) as a previous-stage reduction gear mechanism is disposed between the planetary gear type speed reducer and the motor (the planetary gear train is disposed between motor 70 and the wave gear set, fig. 8);

an input rotation section of the previous-stage speed reducer (sun gear 82, col. 5, line 55, and fig. 8) and the rotor shaft of the motor are coaxially coupled to each other (rotor 78 is keyed to sun gear 82, col. 5, lines 54-55, and fig. 8); and

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the output rotation section of the previous-stage reducer (annulus 92, col. 6, line 16, and fig. 8) and the input rotation section of the planetary gear type speed reducer are coaxially coupled to each other (annulus 92 and wave generator 108 are coaxially coupled, fig. 8).

Regarding claim 4, as best understood, Dalakian teaches:

a supporting block for fixing the planetary gear type speed reducer (gear retaining ring 76, col. 5, line 50, and fig. 8) and a frame for mounting the supporting block (base 22, col. 5, line 51, and fig. 8) are provided;

the fixing section of the planetary gear type speed reducer has a circular outside-diameter section (see fig. 8) and a mounting flat surface parallel to the plane of the rotation output section (mounting flat surface of rigid annulus 112, see fig. A below);

the supporting block includes

a first mounting surface for mounting the mounting flat surface of the fixing section of the planetary gear type speed reducer (first mounting surface of retaining ring 76, see fig. A below),

a second mounting surface for mounting the frame and orthogonal to the first mounting surface (second mounting surface of retaining ring 76, see fig. A below), and

a pair of rib sections for connecting outer both ends of the first mounting surface with outer both ends of the second mounting surface (rib sections, see fig. A below); and

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the outside-diameter section of the mounting flat surface of the fixing section of the planetary gear type speed reducer is cut so that its side of the pair of ribs may be shorter than the circular outside diameter (see fig. A below).

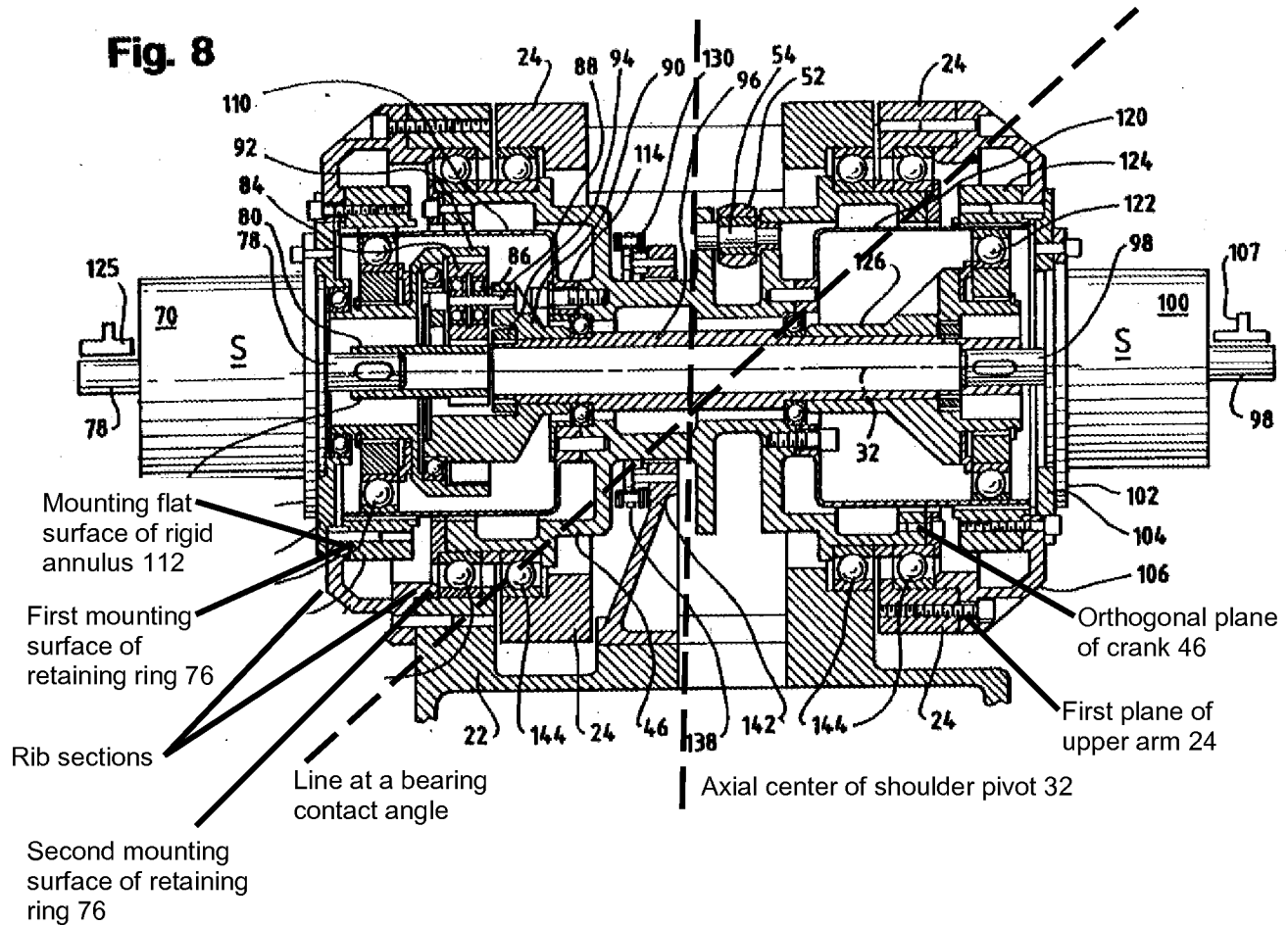


Figure A: Fig. 8 of Dalakian, U.S. Patent 5,222,409



a planetary gear type reducer (wave gear set, col. 6, line 17, and fig. 8)
having a pair of ball bearings (bearings 144, fig. 8) disposed between the fixing

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section and the rotation output section (bearings 144 are disposed axially between rigid annulus 112 and crank 46, fig. 8), and

a motor (motor 70, col. 5, line 47, and fig. 8) disposed coaxially to the rotation input section of the planetary gear type speed reducer (motor 70 is coaxial to wave generator 108, col. 5, lines 54-56, and fig. 8);

the turning arm has a first plane joined to the plane of the rotation output section (first plane of upper arm 24, see fig. A above) and a second plane orthogonal to the first plane (second plane of upper arm 24, see fig. B above); and

the turning arm and the drive device are disposed within a width in the axial direction of the turning pivot of the heavy object (upper arm 24 and the shoulder joint drive device are within the axial width of shoulder pivot 32, fig. 8).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIN D. BISHOP whose telephone number is 571-270-3713. The examiner can normally be reached on Monday to Thursday, 7AM-4PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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